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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,672

04/26/2005

Michihiko Takase

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12/14/2010

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EXAMINER

BURKHART, ELIZABETH A

ART UNIT

PAPER NUMBER

1715

NOTIFICATION DATE

DELIVERY MODE

12/14/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/532,672	Applicant(s) TAKASE, MICHIIKO	
	Examiner ELIZABETH BURKHART	Art Unit 1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 6-8 are pending in the application. Amended claims 6-8 and cancelled claim 9 have been noted. The amendment filed 10/12/2010 has been entered and carefully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani (JP 11-080952) in view of Sakemi et al ('394), Okuyama et al (JP 2001-243886), Hidaka et al (JP 10-106441) and Kim et al..

Shintani teaches a process for forming an MgO film onto a substrate of an AC type plasma display panel [0002] while maintaining a degree of vacuum in the deposition room within a certain range (Abstract). The amount of oxygen introduced into the deposition room is controlled and the amount of gas exhausted from the deposition room is controlled to maintain a certain degree of vacuum within the room [0002], [0004]-[0006]. Since both the amount of oxygen gas being introduced to the deposition room and the amount of gas exhausted from the deposition room are being controlled, one of ordinary skill in the art would have readily envisaged equilibrating these amounts to maintain the degree of vacuum within the deposition room at a desired value.

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Shintani does not teach the specific range in which the degree of vacuum is maintained, that an inert gas and a gas selected from the group consisting of carbon monoxide and carbon dioxide are also introduced to the deposition room, or controlling an amount of dangling bonds in the MgO film.

Sakemi teaches a similar method of depositing a MgO film onto a substrate for a plasma display panel wherein the degree of vacuum during deposition is within the claimed range because the greater the vacuum is below 10^{-4} torr (1.3×10^{-2} Pa), the easier it is for MgO to vaporize which increases the growth rate of the film (Abstract, Col. 1, lines 30-40, Col. 2, lines 50-55, Col. 4, lines 54-58).

Okuyama teaches a method for forming an MgO film on a plasma display panel (Abstract) wherein a mixed gas containing an inert gas and oxygen may be introduced to the chamber during deposition in order to control membranous quality of the film. Okuyama also teaches that the introduction of oxygen reduces oxygen deficiency [0025], which would inherently control the amount of dangling bonds in the MgO film (see p. 8, lines 13-14 of instant specification). Thus, it would have been obvious to control the amount of oxygen introduced in order to control the oxygen deficiency and controlling the oxygen deficiency inherently controls the amount of dangling bonds as evidenced by the specification.

Hidaka discloses forming an MgO protective layer for a plasma display panel wherein steam is introduced, in addition to oxygen, to the evaporation chamber at a specific partial pressure in order to enhance the crystal orientation of the MgO film

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(Abstract). The secondary emission coefficient changes with crystal orientation of an MgO film ([0003] of machine translation).

Kim discloses that the secondary emission coefficient changes for an MgO film with exposure to water vapor or carbon dioxide (p. 5, col. 1).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to operate the process of Shintani under a degree of vacuum within the claimed range as suggested by Sakemi in order to vaporize the MgO more easily, which leads to an improved growth rate of the film, and incorporate an inert gas into the process of Shintani as suggested by Okuyama in order to control the membranous quality of the film. Further, it would have been obvious to introduce water vapor (i.e. steam) as suggested by Hidaka during the process of Shintani in order to enhance the crystal orientation of the MgO film and to use carbon dioxide as suggested by Kim as an alternative to the water vapor of Hidaka since carbon dioxide changes the secondary emission coefficient of the MgO film similarly to water vapor. Also, one of ordinary skill would have expected similar results using carbon monoxide since it has similar structure and properties to carbon dioxide.

Regarding Claims 6-8, Since Shintani teaches controlling the amount of gas (oxygen) introduced, it would have been obvious to one of ordinary skill in the art to control the amount of any gases being introduced, such as inert gas or carbon dioxide, to maintain the desired degree of vacuum. Also, it would have been obvious to one of ordinary skill to introduce oxygen or carbon dioxide in a predetermined amount in order to deposit a film having desired properties since Okuyama discloses a relationship

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between the oxygen introduced and the oxygen deficiency in the deposition room and Hidaka and Kim disclose a relationship between water or carbon dioxide introduced and desired properties of the PDP, such as secondary emission coefficient and crystal orientation.

Thus, claims 6-8 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Shintani, Sakemi, Okuyama, Hidaka, and Kim.

Response to Arguments

3. Applicant's arguments filed 10/12/2010 have been fully considered but they are not persuasive. Applicant argues that none of the Sakemi, Okuyama, Hidaka, and Kim references discloses controlling an amount of dangling bonds in the metal oxide film. The examiner disagrees. Okuyama discloses that the introduction of oxygen reduces oxygen deficiency [0025] which inherently restrains the amount of dangling bonds as evidenced by p. 8, lines 13-14 of the instant specification. Thus, it would have been obvious to control the amount of oxygen introduced in order to control the oxygen deficiency and controlling the oxygen deficiency inherently controls the amount of dangling bonds as evidenced by the specification.

Applicant argues that Kim only discloses that introduction of steam or carbon dioxide causes the secondary emission coefficient to decrease (i.e. a change in the state of secondary electron emission), but does not disclose controlling the amount of dangling bonds in the metal oxide film. The examiner disagrees. Since Kim discloses that introduction of steam or carbon dioxide causes the secondary electron emission to change (p. 5, col. 1), it would have been obvious to control the amount of steam or CO₂

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introduced in order to form an MgO film having desired film properties, such as a desired secondary emission coefficient. This would inherently control the amount of dangling bonds in the film since the change in secondary electron emission is caused by generation of dangling bonds from the C or H impurities as evidenced by p. 8, lines 4-8 of the instant specification.

Applicant argues that none of the Shintani, Sakemi, Okuyama, Hidaka, and Kim references discloses that the equilibrating of the amounts comprises adjusting an amount of the inert gas introduced into the deposition room. The examiner disagrees. Since Shintani teaches controlling the amount of gas (oxygen) introduced, it would have been obvious to one of ordinary skill in the art to control the amount of any gases being introduced, such as inert gas or carbon dioxide, to maintain the desired degree of vacuum.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIZABETH BURKHART whose telephone number is (571)272-6647. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth Burkhart/
Examiner, Art Unit 1715

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1715